

WHAT IS CLAIMED IS:

1. Vacuum load lock semiconductor wafer processing equipment,
comprising:

¹⁰
a load lock chamber,

²⁰
a transfer chamber,

³⁰
a reaction chamber located above said transfer chamber, and

a robot located outside said load lock chamber that includes a wafer
transfer arm,

wherein said wafer transfer arm is adapted to operate inside said load
lock chamber and inside a vacuum, and is adapted to transfer said semiconductor
wafers between the load lock chamber, the transfer chamber, and the reaction
chamber.

2. The vacuum load lock semiconductor processing equipment described in
Claim 1, further comprising:

a load lock chamber exhaust port,

a transfer chamber exhaust port, and

a reaction chamber exhaust port,

wherein said reaction chamber and said transfer chamber are evacuated
by switching between said reaction chamber exhaust port and said transfer
chamber exhaust port.

3. The vacuum load lock semiconductor processing equipment described in
Claim 2, wherein said transfer chamber is evacuated from a position lower than said
semiconductor wafers.

4. The vacuum load lock semiconductor processing equipment described in
Claim 1, further comprising:

³⁴
an insulation separating plate adapted to separate said transfer chamber
from said reaction chamber.

5. The vacuum load lock semiconductor processing equipment described in
Claim 1, wherein said reaction chamber comprises an insulating material.

6. The vacuum load lock semiconductor processing equipment described in Claim 1, wherein said transfer chamber and said reaction chamber are configured to prevent formation of a film on an interior surface of said transfer chamber.

7. A method of processing semiconductor wafers, comprising:

5 providing a load lock chamber, a transfer chamber, and a reaction chamber, wherein said reaction chamber is located above said transfer chamber,

providing a robot that includes a wafer transfer arm, wherein said wafer transfer arm is adapted to operate inside said load lock chamber and inside a vacuum, and

10 transferring said semiconductor wafers between said load lock chamber, said transfer chamber, and said reaction chamber using said wafer transfer arm.

8. The method described in Claim 7, further comprising:

evacuating said reaction chamber and said transfer chamber by switching between a reaction chamber exhaust port and a transfer chamber exhaust port.

15 9. The method described in 7, further comprising:

evacuating said transfer chamber from a position lower than said semiconductor wafers.

10. The method described in Claim 7, further comprising:

20 preventing a reaction gas in said reaction chamber from entering said transfer chamber by introducing an inactive gas into said transfer chamber.

11. The method described in Claim 7, further comprising:

preventing deposition on an interior surface of said reaction chamber by comprising said interior surface of said reaction chamber of an insulating material.

25 12. The method described in Claim 7, further comprising:

preventing deposition on an interior surface of said transfer chamber by isolating said transfer chamber from said reaction chamber.